

EXECUTIVE SUMMARY

A good scientist is a person with original ideas. A good engineer is a person who makes a design that works with as few original ideas as possible -Freeman Dyson.

The Division of Civil, Mechanical and Manufacturing Innovation (CMMI) was formed on October 1, 2006, by the merger of the Division of Civil and Mechanical Systems (CMS) and the Division of Design and Manufacturing Innovation (DMI). As CMMI matures, it will seek to take advantage of the synergy between its current activities, and it will strive to allocate its resources in ways that better serve the overall research community. This plan identifies opportunities that CMMI has to advance the goals of the National Science Foundation (NSF) and the Directorate for Engineering (ENG) and to lead its research communities to higher levels of performance. The plan provides guidelines for decision making in the management of CMMI's resources.

CMMI has been organized into three clusters: Materials Transformation and Mechanics, Innovation Sciences and Decision Engineering, and Engineering Infrastructure Systems. These clusters group programs roughly by areas of expertise in their research communities. One goal of this clustering is to encourage interaction among program directors to foster further synergy among programs.

Each CMMI program presents a unique opportunity to enable frontier and transformative research. One goal of the division is to encourage research projects that exploit the division's resources and provide the greatest possible payoff to engineering and to society. To encourage such research, CMMI will:

- Promote the development and health of the research community through the funding of the best proposals, emphasizing transformative research
- Enable easy communication to alert the community to special opportunities
- Foster the emergence of new areas of research through the use of funding mechanisms such as Small Grant for Exploratory Research (SGER) awards and awards to small groups
- Promote the support of students through mechanisms such as Research Experiences for Undergraduates (REU) supplements
- Engage a diverse set of reviewers to obtain unbiased and high-quality reviews
- Encourage collaborations across disciplinary and geographical boundaries
- Ensure transparency through standardization across the division and adoption of best practices
- Enable the research community to contribute to the evolution of the division through workshops and assessments aimed at setting research agendas
- Keep mortgages low to enable flexibility in year-to-year funding priorities

CMMI will also conduct a self-evaluation through indicators such as:

- Number of workshops conducted
- Outreach activities conducted

- REU/Research Experiences for Teachers (RET) and other supplemental awards
- Proposal dwell times
- Major honors and awards received by grantees
- External assessments, including by the National Academy of Engineering (NAE), World Technology Evaluation Center (WTEC) and the Committee of Visitors (COV)